

CHEMTEQ[®]

Breakthrough Indicators for Low-Flow Filters (BTI LFF and BTIS LFF)



why is it important to use filter change indicator?

first let us look at filters change current practices

a. Do nothing

Continue using filter until it is exhausted and toxic gases and vapors emit to the surrounding environment. User replaces filter when,

- a. Concentrations of emitted toxic gases and vapors exceed the threshold of the smell. Threshold of smell is always higher than OSHA permissible exposure limits (PEL).
- b. Safety officer or industrial hygienist conducts routine air sampling and finds high levels of toxins in the work environment and identifies the exhausted filter as the source of emission.
- c. OSHA inspector conducts air sampling and finds high levels of toxins in the work environment and identifies the exhausted filter as the source of emission.

this practice defeats the purpose of using filters as safety devices to protect the user and the environment from emitted toxic gases and vapors

b. Change out schedule

Follow filter change schedule every 3 to 6 months depending on the size and capacity of the filter. Two possible scenarios can happen when users follow the change out schedule practice,

- a. Filter is installed into a waste container which has multiple HPLC outlet ports that are continuously used. This heavily used filter would be exhausted in few weeks and the user ends with a situation similar to the do-nothing scenario mentioned above.
- b. Filter is installed into a waste container which has one HPLC outlet port that is rarely used. This barely used filter would take 9 to 12 months to get exhausted. The scarcely used filter would be replaced prematurely.

following this practice either ends with a situation similar to the do-nothing scenario and getting exposed to toxic gases and vapors or ends with replacing a good filter prematurely.

now let us consider the use of real-time filter change indicator

Continue using filter until consumed and the filter change indicator changes color

Benefits:

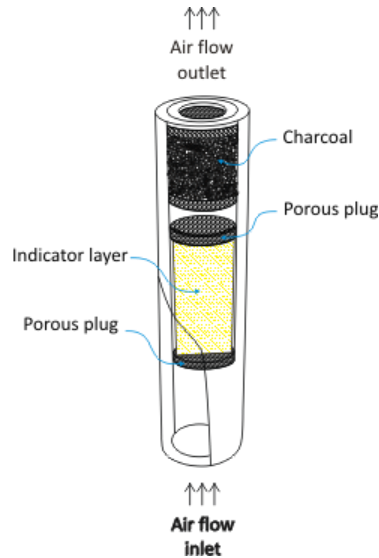
- a. User is protected from exposure to toxic gases and vapors.
- b. The workplace and the environment are protected from toxic emissions.
- c. Get the most value from the filter and replace it only when saturated and exhausted.

Description of the BTI LFF (Patented)

The BTI LFF is essentially a hollow transparent tube having colorimetric indicator strip inside and a charcoal trap at the top of the tube (Figure 1).

BTI LFF = Breakthrough indicator for low-flow filters

Figure 1



How Does the BTI LFF Works?

When filter becomes exhausted, toxic gases and vapors breakthrough it. The contaminated air then enters the BTI LFF and chemically reacts with the indicating sensor producing vivid color change, thus alerting the user to change the filter.

While the indicator is changing color, the charcoal on top of the BTI LFF traps traces of contaminants from escaping to the outside environment. The charcoal trap also protects the colorimetric indicator from changing color due to exposure to contaminants in the surrounding environment. This insures that BTI LFF changes color only when filter is exhausted irrespective of the outside environment.



Figure 2

3

How To Install the BTI LFF Into Filter?

Use with closed pores foam plug in the filter outlet with a $\frac{3}{8}$ " diameter opening in the middle. Other opening sizes are possible if the diameter is equal to or larger than the filters inlet (intake) diameter. Other closed pores flexible plastics can also be used.

- a. Insert the BTI LFF into the opening as shown in Figures 3.
- b. Replace filter when BTI LFF changes color.

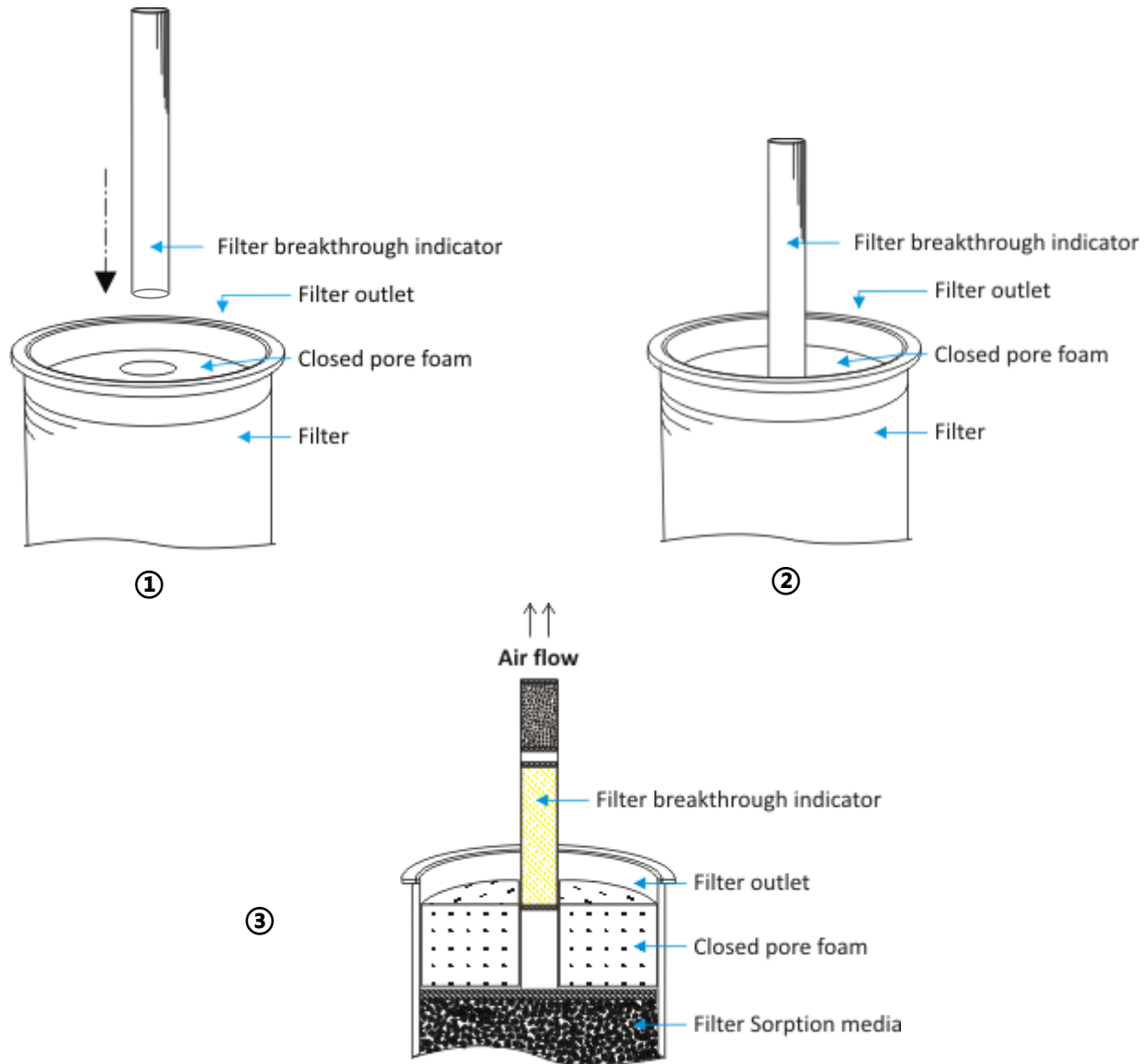
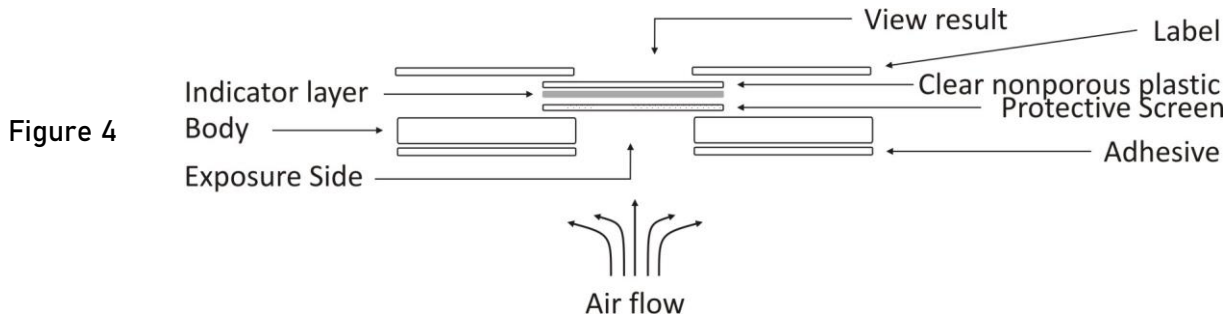


Figure 3

Description of the BTIS LFF (Patent Pending)

The BTIS LFF is an indicator sticker having exposure side with adhesive and view result side (Figure 4).

BTIS LFF = Breakthrough indicator sticker for low-flow filters



How Does the BTIS LFF Works?

When filter becomes exhausted, toxic gases and vapors breakthrough it. The contaminated air then enters the BTIS LFF from the exposure side and chemically reacts with the indicating sensor producing vivid color change, thus alerting the user to change the filter (Figures 5 and 6).

The clear nonporous plastic protects the colorimetric indicator from changing color due to exposure to contaminants in the surrounding environment. This insures that BTIS LFF changes color only when filter is exhausted irrespective of the outside environment.

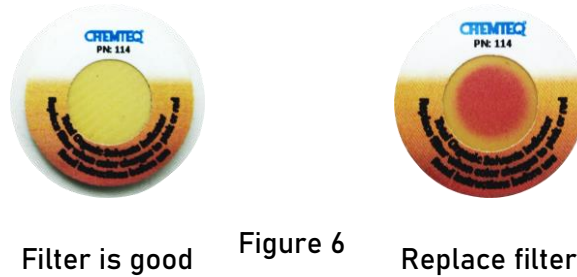


Filter is Good



Replace Filter

Figure 5



How to Install the BTIS LFF Onto Filter?

Use with open pores foam plug in the filter outlet. Other porous plastics can also be used.

- Peel off the bottom adhesive protective liner to expose adhesive.
- Attach the BTIS LFF onto the center of the filter outlet (Figure 7)
- Replace filter when BTIS LFF changes color.

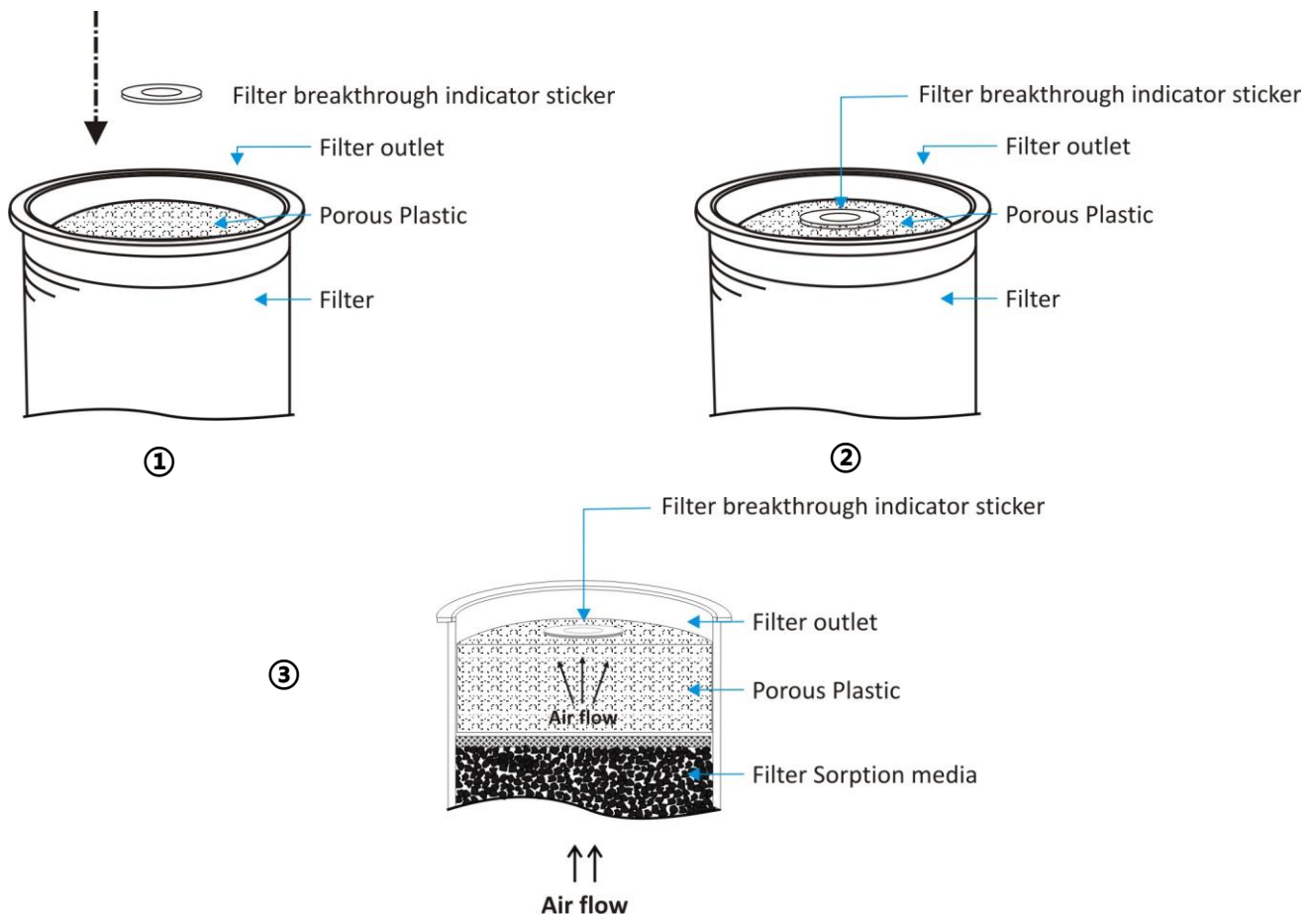


Figure 7

PLEASE CALL OR EMAIL US IF YOU HAVE ANY QUESTIONS REGARDING THE BTI LFF or THE BTIS LFF

A decorative graphic in the bottom left corner consisting of a cluster of light blue hexagons of varying sizes, arranged in a non-uniform, organic pattern.

CHEMTEQ[®]

600 West 24th Street, Suite B
Norfolk, Virginia 23517, USA

Tel: 757-622-2223

Toll-free: 855-CHEMTEQ (855-243-6837)

sales@chemteq.net

www.chemteq.net